

The University of Chicago

MEANING AND METHODOLOGY
IN HELLENISTIC PHILOSOPHY

A PART OF A DISSERTATION SUBMITTED
TO THE FACULTY OF THE DIVISION OF
THE HUMANITIES IN CANDIDACY FOR
THE DEGREE OF DOCTOR OF PHILOSOPHY

DEPARTMENT OF PHILOSOPHY

1935

By
ESTELLE ALLEN DE LACY

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THE comparatively recent interest in the problem of meaning and semiotic has led to a reviewing of the history of philosophy from a fresh point of view. Certain periods of western thought have been found to be characterized by this type of speculation: namely, the Hellenistic period of ancient philosophy; the fourteenth century of medieval philosophy; the seventeenth and eighteenth centuries with Hobbes, Locke, Condillac, and Leibniz; and the contemporary period with its manifold speculation in the fields of linguistics, psychology, sociology, anthropology, psychiatry and psychopathology, mathematics, and in philosophy in the fields of symbolic logic, phenomenology, with occasional attempts at the same analysis in aesthetics and epistemology. These semantic-conscious periods seem to be subsequent upon periods characterized by great systems, dogmatism in metaphysics, and realism in logic. Accordingly, the following periods tend to exhibit a critical attitude toward established tenets and to formulate a methodological enquiry with a resulting separation of the fields of philosophy according to an analysis of meaning.

The differences which characterize the various representatives of this movement are due at least in part to the several approaches to the problem. On the one hand, the scientific approach to the problems of philosophy is made from an interest in mathematics and formal enquiry. On the other hand, the essentially empirical point of view of the empirical sciences is reflected in philosophy. Thus, there are rationalists and empiricists interested in the problem of meaning and semiotic speculation.

Such a period was the Hellenistic period following upon the great systematic philosophies of Democritus, Plato, and Aristotle. Post-Aristotelian philosophy is distinctly 'modern' in flavor in that the Stoics, Epicureans, and Sceptics are concerned primarily with an analysis of meaning and the establishment of a scientific method as the propaedeutic to a philosophic system.

Since the ordinary material on the Stoics, Epicureans, and Sceptics is familiar, this paper will attempt to evaluate the contributions to the history of semiotic which are found in less known material;



the principal source for which is a treatise on Epicurean logic among the Herculanean papyri. The *Περὶ Σημείων καὶ Σημειώσεων*, or *De Signis*,¹ as it is called, has remained almost unknown to English readers in spite of its valuable material on logic and epistemology. This is one of the treatises of Philodemus, poet and philosopher of the first century B.C.²

The library of Philodemus at Herculaneum indicates the effort on the part of later Epicureanism to treat all the major fields of philosophy, broadening greatly the interests of the school in comparison with its earlier speculation.

The exchange of polemical writings between the Epicureans and other schools began with the beginning of Epicureanism and continued uninterruptedly down to the time of Philodemus. Many of the Herculanean papyri have a definite place in the history of this opposition. They carry it into other fields with works on rhetoric, mathematics, music, poetics, and logic. The Epicurean opponents are primarily the Stoics, although attacks are also made upon Xenophon, Plato, the Cynics, and the Peripatetics.

The greatest contribution to the history of philosophy of the Herculanean papyri lies perhaps in the field which Epicurus himself called *Canonic*, and which was subsequently broadened to include the general fields of logic and epistemology. The works on logic are not numerous; yet they are on the whole more significant than the more voluminous works on ethics, because they treat of a field which was previously little known. There are a few works on metaphysics, and even their significance, especially the work on the gods, is largely logical. The same is true to some degree of the works on rhetoric and aesthetics.

Epicurus' logic appears to be primarily destructive, rejecting the Aristotelian logic and putting very little in its place. The Epicureans, however, gradually developed a new logic, characterized

¹ Edited by T. Gomperz in his *Herkulanische Studien*, 1865.

² Aside from his works we know little about Philodemus himself. There are references to him in Cicero, Asconius, and Strabo as to his status as poet and philosopher. The Epicurean school at Naples is perhaps most famous for its influence on the Augustan literary figures, Virgil, Quintilius, Varius, and probably on Plotius and Horace. Philodemus studied under the famous Epicurean Zeno of Sidon at Athens in the first part of the first century B.C. It was at Athens where he came in contact with the Roman patron of arts, Piso, the enemy of Cicero, and became subsequently a member or founder of the school at Naples.

by a predominant emphasis on empiricism. It is not until the later period that this empiricism is found in its widest application to the various fields of philosophy; and its manifestation in the works of Philodemus and Demetrius Lacon³ gives a new appreciation of Epicureanism and Greek empiricism.

1. *The Stoic position.*—The rationalists of the Hellenistic period belong to the Stoic school. Their contribution is not in the line of an empirical method, but in the formulation of a new approach to logic. Stoic logic is independent of the Aristotelian logic and is more akin to modern formal logic in certain respects. In the first place, logic is defined by the Stoics as a semiotic, a science of signs.⁴ It is the science of signs and things signified according to Chrysippus. It includes grammar and language (since words are signs), epistemology, and a theory of perception, also based upon a theory of signs. Logic in the narrow sense, however, is limited to the analysis of concepts, the signified, which form the basis of propositions and syllogisms. The medieval division between conceptualists and nominalists is exhibited in the Stoic and Epicurean schools, respectively. The Stoics make a triadic division of the symbolic relation in connection with their analysis of what is true:

... There are three factors joined to each other, the thing signified, the sign, and the object. Of these, the sign is the word, such as 'Dion'; the thing signified is the thing indicated by it, which we grasp in our concept of a co-existent reality, but which the barbarians do not understand although they hear the word; and the object, that which exists outside, as Dion himself. Two of these are material, the word and the object, and one immaterial, the thing signified, or the concept, which is true or false.⁵

In contrast with the Stoics, the Epicureans maintain that words refer not to concepts, but to things directly. In other words, they deny the triadic relation of the Stoics. The Epicureans stress the extensional, as opposed to the Stoic intensional, meaning of words, and maintain that words without extension belong to the realm of opinion and can make no contribution to knowledge. The only propositions which may be known to be true refer directly to objects of experience or are extensions from experience made through the method of analogy.

³ Some of the Herculanean papyri are works of Demetrius.

⁴ Diogenes Laertius VII 45. This is also the definition given by Locke and Peirce.

⁵ Sextus Empiricus, *Adv. Math.* VIII 11, 12.

The shift of emphasis in Hellenistic philosophy from the relation of universal-particular to the relation of sign-signified is apparent in the metaphysical positions of the various schools. The dualism of importance in the Post-Aristotelian period is that between phenomena and noumena—the given and non-given. The methodological problem becomes one of establishing a method which will permit the inference of facts about the non-given through observation and reasoning on signs which are given.

Stoic methodology diverges from the Aristotelian in several significant respects. The Stoics are as strictly rationalistic as is Aristotle in his search for certainty and necessity in knowledge. The empirical or inductive side of the Aristotelian system they tend to neglect. Whereas Aristotle, however, refused to signs the ability to establish any certainty in knowledge, to the Stoics logic is only a semiotic, a system of signs. The Stoic logic differs in another important aspect from the Aristotelian in that it is centered about the hypothetical proposition rather than the categorical syllogism. This distinction is of importance in the analysis of signs and sign relations in the Stoic system. As the study of Stoic logic is the proper approach to their metaphysical system, we shall first consider 'sign' and 'signification' as these terms are used in their treatment of logical reasoning.

The sign in Aristotle is defined as "a proposition demonstratively necessary or probable".⁶ In form the sign is an incomplete syllogism with one premiss lacking. Signs have varying degrees of validity in so far as they correspond to and are convertible into the first, second, or third figures of the syllogism proper. The sign can be said to be demonstratively necessary when it can be converted into the form of a valid syllogism of the first figure; that is, when a universal major premiss can be stated to make the inference from premiss to conclusion an analytic one. However, as the sign properly so-called is incomplete, since particulars only are stated and no universal premiss is presupposed, it cannot be regarded as demonstratively certain.

Similarly, the Stoics define the sign formally as "the proposition in a sound condition which is antecedent and reveals the conclusion".⁷ Here the relation between sign and thing signified is ex-

⁶ *Prior Analytics* II, 70a, 7-8.

⁷ S.E., *Adv. Math.* VII 245.

pressed in the form of a hypothetical proposition, 'If p, then q'. If such a relation holds, p may be said to be the sign of q.

The isolation of the hypothetical proposition indicates the emphasis on the necessary connection between concepts and propositions on the logical level, and between the parts of an interrelated deterministic whole on the metaphysical level. The shift in stress from the terms themselves in the categorical propositions and syllogisms of Aristotelian logic to the relation existing between the terms and the propositions, results in the recognition of the relation of necessary consequence (*ἀκολουθία*),⁸ which allows for the inference from one proposition to another.

It is interesting to note that the Stoics found it necessary to distinguish a loose and a strict type of the relation of implication, which are analogous to material and strict implication of modern symbolic logic. The strict relation of *ἀκολουθία* seems to be an attempt to emphasize the intensional character in the relation (this is characteristic of Stoic rationalism in general), just as C. I. Lewis does in the case of his strict implication. In Stoic terms, the conclusion necessarily follows ("is deducible from" in Lewis's terms) the antecedent because of an internal connection existing between the concepts.

The definition of a sign as "the proposition in a sound condition which is antecedent and reveals the conclusion", involves first of all an analysis of the conditions for a sound hypothetical proposition. According to the first criterion the only unsound proposition is one in which the first term is true and the second false. This is also the only case in contemporary logic in which the relation of material implication between propositions does not hold. The Stoic table of sound propositions is as follows:⁹

1. If it is day it is light.—sound. The premiss is true and the conclusion is true.
2. If the earth flies, it has wings.—sound. The premiss is false and the conclusion is false.
3. If the earth exists, it flies.—unsound. The premiss is true and the conclusion is false.
4. If the earth flies, it exists.—sound. The premiss is false and the conclusion is true.

⁸ S.E., *Pyrrhonic Hypotyposes*, B, 113.

⁹ *Ibid.* 105.

The second criterion for a sound condition involves not the literal truth or falsity of the propositions concerned, but the nature of the relation or connection holding between them.¹⁰ The argument is sound when the conclusion follows as a consequence of the "weaving together", or connection, of the premisses. The relation between the antecedent as the sign and the conclusion as the signified is one of necessary consequence, a connection based on *ἐμφασις*,¹¹ an analytic relation between the two parts of the proposition. The conclusion (the signified) is implicitly or potentially (*δυνάμει*) contained in the antecedent (the sign). This accounts for the necessary connection between them. According to the relation of *συνάρτησις* or *ἀνασκευή*, as it is called in the terminology of the later Stoics, the sign and signified are so connected that the contradiction of the conclusion, or the signified (the thing-in-itself in epistemological terms), involves the contradiction of the antecedent or sign (the apparent object).

For purposes of epistemology, the metaphysical status of the thing signified makes a difference in the inference. Beings or things (*πράγματα*) are divided into two classes of the given (*πρόβηλα*), and the non-given (*ἄδηλα*). The given as apprehended immediately and by itself needs no signs. Signs, however, are necessary in inferring the non-given. The non-given are divided into three classes:¹²

1. τὰ καθάπαξ ἄδηλα—the altogether or completely non-given, as the number of stars. This class of objects is forever incomprehensible and unknowable due to our human finitude and the great scope of the object. Accordingly, there can be no signs of these objects.

2. τὰ πρὸς καιρὸν ἄδηλα—the class of objects which are obscure at the time, that is, accidentally obscure because of attendant circumstances. The example cited is that of smoke signifying fire. This type of relationship, designated by Sextus Empiricus as that of the admonitive sign, in contrast with the indicative sign, is based on the experience of constant conjunction of certain objects. As both sign and signified are appearances, the validity of the inference is easily verified.

3. τὰ φύσει ἄδηλα—things which are obscure by nature and must be known by means of other things which are apparent. These form the class of objects signified by the indicative sign, which by its very nature points out or reveals them. The relation between sign and signified is a natural and necessary one. For example, the imperceptible pores of the skin are known through the flowing of perspiration, which serves

¹⁰ *Ibid.* 113.¹¹ *Ibid.* 112.¹² *Ibid.* 97-103.

as the indicative sign. The indicative sign can claim necessity only on the Stoic assumption of a necessary connection between certain objects, such that one can serve as the distinguishing sign of the other.

The Stoic position in methodology becomes clearest in contrast with the opposing view of the Epicureans. With this by way of general introduction to the Stoic position as found in Chrysippus and Sextus, we may turn to the account of the rationalistic point of view of the later Stoa as expressed by its Epicurean critic Philodemus.

2. *The Epicurean position.*—By way of introduction to Philodemus' treatise a discussion of the general Epicurean position is necessary. The Epicureans from Epicurus their founder had always been the radical empiricists of Greek philosophy, in contrast with the predominant rationalism and idealism of the Stoic school. Furthermore, as their nominalistic successors, the Epicurean school was primarily concerned with problems of logic and methodology, contrary to the prevalent belief that they were not so inclined. The criterion of truth for the Epicureans lies in the senses. Furthermore, sense experience is the ultimate check and test of all hypotheses which attempt to extend knowledge beyond the objects of immediate experience. As all perceptions are true, error is due to opinion which is added by the mind to the original perception. This involves a judgment on our part as to how the object perceived really is. In this process the mind adds to or abstracts from the original perception and thus alters it in some way.

Some objects are as they appear manifestly (ἐναργῆ). Others we are prevented from knowing as they are in themselves because of their minuteness or magnitude, or because they are viewed from a distance. These latter are ἄδηλα as far as our experience is concerned. Corresponding to the Stoic division, the Epicureans have a dual order of the given and non-given:¹³

1. ἐναργῆ—"those objects which are received involuntarily from sensation and feeling".

2. The ἄδηλα are divided into three classes:

A. τὰ φύσει ἄδηλα—"those objects which are not in the past, present, or future comprehensible, concerning which we are doomed to eternal ignorance". For example, it will never be known precisely whether the number of the stars is odd or even, not because the number is

¹³ S.E., *Adv. Math.* VIII 316-20.

ἄδηλον in its nature, but because our human limitations prevent us from ever knowing it.

B. τὰ γένει ἄδηλα—objects which are by their own peculiar nature obscure to us. In this class are the atoms and the infinite void. Their existence as the explanation of both permanence and change in the universe was postulated on purely rational grounds by Leucippus and Democritus. Epicurus insists, however, in conformity with his empiricism, that they must be known by analogy with experience.

C. τὰ προσμένοντα—objects immediately beyond us, which are for the time being unknown or not clearly or completely known. These may be present or future objects.

The given objects are immediately present to us and offer no difficulty in verifying them. Judgments concerning them are verified directly and easily by reference to the object. However, when the object is ἄδηλον, obscure to us, the verification cannot be so direct or so certain. Here, too, the criterion is always ultimately the sensible fact, and the method is essentially the same, although less direct. There are two methods of considering the unknown according to its nature, that is, as belonging to the class of C objects or to the class of B objects. In the case of the third class of objects which are for the time being unknown as lying in the future or not completely known due to certain attendant circumstances in the present, the process is known as ἐπιμαρτύρησις or "verification".¹⁴ If the judgment can be verified by actual experience, by the appearance of the object or fact as it was designated in the judgment, its truth is established. By admitting such a criterion, Epicurus has not departed from his strictly empirical point of view; yet he has extended his knowledge beyond his immediate experience and beyond present experience in general. Opinions according to this method are judged to be true when they are verified by the facts themselves in the present immediately, or by the appearance in the future of what was expected and predicted in the present judgment. Hypotheses may be made if they can be verified or supported by facts. But can we go still further? In other words, can our method be generalized so as to apply to objects that are not known by means of sense appearance—τὰ γένει ἄδηλα? This point is important because it involves the validity of the atoms and void, *i.e.*, Epicurean metaphysics. The method used here, ἡ οὐκ ἀντιμαρτύρησις,¹⁵ is an indirect form of verification.

¹⁴ S.E., *Adv. Math.* VII 212.

¹⁵ *Ibid.* 213-6.

Opinions or hypotheses about objects that are obscure by nature are true in so far as they do not conflict with known appearances or present opinions. The Epicureans posit the existence of a void although it is not directly experienceable. However, its existence does not conflict with any known facts and is indeed supported by the empirical fact of motion, which requires a void for its possibility.

Later Epicureanism shows even more clearly this empirical tradition. Philodemus' treatise *De Signis* presents the Stoic position in support of the *a priori*, rational nature of the sign relation in opposition to the Epicurean view of the sign and methodology as based entirely on experience. The Stoic position here presented does not differ radically from the position found in the logic of Chrysippus. Later Stoics must have contributed much in the way of dialectical support and systematization. The Stoic position is that the only valid process of inference is that of ἀνασκευή or contraposition. The distinction is first made between the general or common sign and the particular sign. The particular sign, which alone is valid, exists only when the unknown exists, and is indicative by its very nature of that which it signifies. The test of the particular or indicative sign is an *a priori* one. If the thing signified is denied, the sign is also. The common or general sign may be present on the existence of several signified objects, no one of which it can signify certainly.

The Epicurean position is that unless a constant relation between objects has first been established by experience, the Stoic *a priori* test is not possible. A relation of cause and effect is only learned from experience and is not determined *a priori*. The sign in this case is based on a method of analogy (ὁ κατὰ τὴν ὁμοιότητα τρόπος). The method is strictly empirical and based on the observation of similarities in our experience and upon certain constant conjunctions, from which we infer like similarities and conjunctions in the unknown.

3. *The Stoic criticism.*—The Epicurean method of analogy, the Stoics contend, breaks down if there are unique cases within our experience.¹⁶ If experience is not completely uniform we cannot infer from what occurs in our experience to experience in general, or to realities beyond experience. If there are unique

¹⁶ Philodemus, Cols. I; II; XV.

cases in our experience there might also be unique cases outside our experience which would destroy any analogy. For example, the magnet is the only rock which draws iron. The unknown might conceivably contain many such peculiarities. Our experience indicates pygmies and giants as deviations from the normal character of men, so the inference of the characteristics of people in the unknown regions is somewhat limited.

According to the Stoics, the argument from analogy is valid only in so far as it can be reduced to that of contraposition. The inference on the part of the Epicureans of the mortality of men in our experience should be stated as follows: "Since men are mortal in our experience, if there are men in other places similar to us in other respects, and in *mortality*, they are mortal."¹⁷ This argument makes clear the insistence of the Stoics on an analytic relation for valid inference. As a consequence of the insistence on a relation of identity or at least partial inclusion, the analogical argument becomes valid only if the characteristics on which it is based belong to the essence and concept of man.

The Epicureans, the Stoics say, contradict their own method of analogy. Bodies in our experience are all destructible and have color; yet the atoms, which are also bodies, are considered to be indestructible and devoid of secondary qualities.¹⁸

The Stoics challenge the Epicureans again on their theory that the sun is as large as it appears. From empirical observation they must hold that: "Things that appear to move slowly either actually move slowly or are very large and far distant. We know that the sun does not move slowly, as it traverses the heavens from east to west during the day. Therefore, it is large and far distant from us."¹⁹

Furthermore, the basis that the Epicureans employ for their analogy is not clear. There are two possibilities, each of which offers difficulties:

A. If the completely alike (*τὸ ἀπαρραλλανκτόν*) is the basis of the analogy, the sign and signified (the appearance and the non-given) would be identical (differing only in number) and so not distinguishable.²⁰

B. If the merely similar is the basis, the very difference and

¹⁷ Cols. V; III 1-7.

¹⁸ Col. V 1-7.

¹⁹ Col. X 1-15.

²⁰ Col. XIX 30-33.

uniqueness of the non-given may be what destroys the analogy.²¹

No argument based on experience and the observation of a mere succession of similar occurrences or their constant conjunction can achieve the necessity and certainty required by the Stoic system. Connection, not conjunction, is necessary. The Epicureans hold that when nothing opposes or conflicts with their conclusions their analogy is valid.²² How can we know that nothing already experienced, or yet to be experienced, in the future, contradicts or will contradict the present conclusions?

In summary, the Stoics hold that the Epicureans can find in their empiricism and process of induction no basis for inference from the given appearance to the large part of reality not immediately known:

1. It is impossible to examine all appearances, yet inadequate to examine only some. The unexamined may conceivably be the ones which should have an essential influence on the conclusion. Conclusions based on induction are always incomplete.

2. Physical conditions differ, and it is impossible to take all circumstances into consideration.²³

3. If the basis of analogy is taken as the identical, the only difference is numerical. If the basis is only the similar, the conclusion is not reliable.

4. The unknown has certain peculiarities of its own which may destroy the analogy through similarity or likeness. Without the assumption of the uniformity of nature, inductive inference is not valid.

4. *The Epicurean answer.*—Philodemus presents the empirical side of the polemic. He contends that the Stoic method of inference, ὁ κατὰ τὴν ἀνασκευὴν τρόπος, is based upon the Epicurean method of analogy or induction, and derives its certainty from that basis. Our experience furnishes us with the best and only criterion for judging the non-given and unexperienced. On the basis of a general analogy with events and objects in our experience we can infer certain facts about the existence and characters of objects lying outside our experience. For example, we conclude from the mortality of all men in our experience to the mortality of all men everywhere. The argument is stated as follows: "Since men in

²¹ Col. XIX 33-6.

²² Col. VIII 1-7.

²³ Cols. XXV; XXVI.

our experience are mortal, wherever there are men, they are mortal."²⁴ The Stoic position, on the other hand, was that such an argument is valid only in so far as it rests on the rationalistic method of *ἀνασκευή*, in which the relation must be an analytic one to be necessary.

The Epicureans hold that the Stoic position rests ultimately on induction from experience, and that if the method of analogy has no necessity or compulsion, the Stoic inference has none. In the argument, 'If there is motion, there is void', the motion is taken as the sign of the void. The Stoic test is an *a priori* one: the denial of the thing signified (the void) results in the simultaneous denial of the sign (the motion). The Epicureans, on the other hand, hold that no such conclusion is possible from the *a priori* point of view until we find from observation that nowhere is there motion without void:

Taking into consideration the accompanying circumstances of objects moved in our experience, we conclude that under these conditions all objects are moved, and in this way we infer that it is not possible to have motion without void.²⁵

Thus the abstract principle of the Stoics can only be formulated after experience justifies it through an argument based on analogy. Therefore, the Epicureans conclude, the argument of contraposition can claim no certainty if analogy has none, as the latter is the source and ultimate criterion of the former.

Furthermore, the Stoics should distinguish two types of *ἀνασκευή*.²⁶ According to the first type, if the second term is denied by hypothesis, the first is also necessarily denied, as in the proposition, 'If there is motion, there is void'. Suppose we deny the void. The Stoic contention is that by the mere negation of it, the motion is also removed. On the other hand, there is another type of *ἀνασκευή* aside from this purely formal and rationalistic consideration. It is impossible to *conceive* of the first, motion, existing and being such as it is, without the second, the void, existing and being such as it is.²⁷ Take for example the statement, 'If Plato is a man, Socrates is a man'. If this is true, it becomes true that, 'If Socrates is not a man, neither is Plato a man'; not because of

²⁴ Col. IV 1-2.

²⁶ Col. XI, 30-40; Col. XII.

²⁵ Col. VIII 32-Col. IX 3.

²⁷ Col. XII 13-19.

the fact that if Socrates is denied, Plato is along with him, but because it is "inconceivable" (*ἀδιδανόητον*) that Socrates be a man and Plato not a man.²⁸ Inconceivability is, however, an empirical criterion.²⁹ Something is always inconceivable in terms of our experience, and the argument of inconceivability is basically an analogical argument. Yet inconceivability is the only argument the rationalist has to fall back on. "Since men decapitated in our experience die and do not grow new heads, we infer that all men decapitated die everywhere."³⁰ It is *inconceivable* that they should not. For a valid analogy on the basis of experience the inference can be made only if there is nothing in experience or the facts of experience opposing such a conclusion. We cannot conclude from the re-growth of hair and nails that eyes and heads will grow again. The particular sign of the Stoics holds only that it is inconceivable for the given to be or to be such as it is, if the non-given does not exist. This inconceivability, however, rests solely on an empirical argument from analogy.

The chief objection on the part of the Stoics was that the argument of inference from analogy breaks down if there are unique cases in our experience, as there might also be such cases beyond our experience which would destroy the analogy.³¹ Even one exception would destroy the analogy and weaken the induction. This fact the Epicureans are willing to admit. Breaks in the causal chain and absolutely unique and unpredictable events would certainly render inductive reasoning extremely ineffective except within a very narrow range. However, the Stoic position is not tenable, nor able to overthrow the status of empirical reasoning. The fact that a magnet is the only stone that will draw iron does not destroy the possibility of an analogy. The very distinguishing characteristic or peculiarity of an object may become the basis for an analogy. If some magnets drew iron, and some did not, the argument would be invalid. However, if all magnets we know of draw iron without exception, we can legitimately conclude that it is a characteristic of all magnets wherever they are found to do this.

Similarly, nothing hinders the generalization that the square of 4 units always has its perimeter equal to its area, although it differs from all other squares in this respect.³² Furthermore, we

²⁸ Col. XII 19-30.

³¹ Col. XV.

²⁹ Col. XII 30-40.

³² Col. XV, 13-35.

³⁰ Col. XIII 8-12.

do experience a certain range of difference within our experience. We can expect similarly a range of difference to occur outside our experience.³³ Peculiarities are subject to the same test of experience as similarities. It is ridiculous to infer by means of a sign relation from the given to the existence of a characteristic of the unknown and in this inference contradict in any way the apparent facts of experience.³⁴

The Epicureans realize the importance of the social factor in the verification process. The importance of the past is mentioned:³⁵ "Since we know from history that men in the past were born and died, and in the present we ourselves experience the birth and death of various persons, with no evidence to the contrary, we can conclude with certainty that all men are mortal." Then and only then does it become possible to make the rationalistic generalization: "Men as men are mortal."³⁶

The Stoics charged the Epicureans with inconsistency in not attributing destructibility and secondary qualities to the atoms, when these qualities belong to all bodies in experience. Philodemus maintains that bodies are not essentially destructible, but only in that they "participate in a nature opposing and weaker than the corporeal."³⁷ This view seems to rest on the distinction between primary and secondary qualities made first by Democritus. Some distinction obviously has to be made between qualities that are constant in experience and those which are correspondingly inconstant and variable. Bodies in the dark have no color, yet as tangible they are certainly bodies.³⁸

The argument forces Philodemus to state more specifically how he conceives the nature of the relation of signification between the known and the unknown; also what is the legitimate basis of the analogy and inference from the one to the other. The transition from any particular to any other is obviously not permissible. In a true analogy the transition is made from one class or particular to the class or particular which is most like it, when nothing opposes such an inference.³⁹ From the genus the inference may be made to the species directly under it, and in turn from one particular to the one bearing the most similarity to it. The con-

³³ Col. XVII 18-35.³⁴ Col. XV 25-8.³⁵ Col. XVI 35-8.³⁶ Col. XVII 1-5.³⁷ Col. XVII 36-7; XVIII 1-2.³⁸ Col. XVIII 3-10.³⁹ Col. XVIII; XIX.

clusion can be made with certainty only where the situation offers "no glimmer of the opposite".⁴⁰ The number of cases necessary for a valid inference varies with the situation. In some cases one instance may be a sufficient basis for the inference; in others, only a few observed instances. In still others many such are necessary for a conclusion which is considered merely highly probable. This problem is closely related to the previous one of the distinction between the properties of objects on the basis of the variability and constancy of such properties, and also upon the question as to the relevancy of purpose in effecting such a distinction.

The main issue between Stoics and Epicureans is the epistemological one. How can one legitimately, within an empirical theory of meaning and truth, and with a methodology based solely therein, infer from appearances to the unknown, from the experienced and given to the non-experienced and non-given?

Philodemus gives the answers made by Zeno of Sidon⁴¹ to his opponents:

1. It is not necessary to examine all appearances, but in many similar and varying ones to find a common element, which is found to belong to the members of the same general class.⁴² On the basis of this, the conclusion is made to other similar qualities.

2. There is a limit to the variations possible. Although we recognize a range of variation in food, atmospheric conditions, and other factors in the physical environment, there is a limit to this variation. For example, although within our experience men are found to vary greatly, yet we cannot go so far as to conceive of men existing who are made of iron, and are able to go through walls as we go through air.⁴³

3. Both the completely alike or identical and the similar may be the basis of inference by means of signs. Inference may be made on the basis of the completely alike when there is a difference of accompanying circumstances.⁴⁴ The merely similar may be the basis when a common quality has been observed in a number of cases by means of induction.

4. It is necessary to distinguish between essential and accidental qualities of objects. Even if accidental qualities are particular and

⁴⁰ Col. XVIII 29-31.

⁴¹ Zeno of Sidon was an Epicurean scholarch of the early first century B.C. He was one of Cicero's teachers as well as Philodemus'.

⁴² Col. XX 35-40.

⁴³ Col. XXI 36-8; XXII 1-2.

⁴⁴ Col. XXII 3-6.

peculiar, an analogy is still possible on the basis of certain essential characteristics of objects. For example, a more certain inference can be based on the mortality of all men than on their length of life.

5. Furthermore, a distinction must be made between absolute and relative analogies. Some may be considered general and unchanging, others always relative.⁴⁵ General and constant analogies may be established for the action of certain poisons. Only relative analogies, however, may be established for foods. No one can argue on the basis of the color, odor, or taste of a food to the goodness or badness of it, as these qualities may conceal quite different powers in the unknown object.⁴⁶ Again the range of deviation is limited. We could never go so far as to conclude that there might be men eating coals and digesting them.

The empirical method does not restrict us to our personal and individual experiences. Those who have not been to Sicily, for example, do not doubt its existence.⁴⁷ We accept the testimony of others and of books as long as no present appearances or previously demonstrated facts conflict with such testimony.⁴⁸

Necessity is built up from the observation of constant conjunction. Since we have never seen smoke without fire, nor motion without empty space, we say that smoke is the sign of fire, motion of void.⁴⁹ This is the basis of the causal connection. The establishment of a system of *a priori* logical necessity, such as the Stoics posit, is subsequent to this recognition of sequences on the empirical level. After the fact has been observed as such, the Stoic rationalistic test is applicable. If the second term is denied, the first is also, and the relation of necessity in the consequence of the ἄδελον on the πρόδελον is confirmed. When experience has shown that constant conjunctions and similarities occur, the Stoic hypothetical proposition expressing the necessary connection of two terms may be stated as follows: "If the second is denied, the first is also."⁵⁰ Hypotheses on the logical and theoretical level are formed on the basis of information about connections of terms given by the observation of sense experience. The validity of these hypotheses, accordingly, is dependent upon their correspondence

⁴⁵ Col. XXV 30-9.⁴⁶ Col. XXVI 1-9.⁴⁷ Cf. Galen, *Subfiguratio Empirica*, Ch. viii.⁴⁸ Col. XXXII 19-27.⁴⁹ Col. XXXVI 1-7.⁵⁰ Col. XXXVII 32-6.

with facts and their adequacy in comprehending these facts, as well as on their internal coherence or consistency with each other.

5. *The Sceptical position.* Stoic rationalistic *a priori* method owes its formulation at least in part to the development of such a method in Mathematics.⁵¹ Although we have no evidence for a corresponding relation between the Epicurean philosophy and empirical science, we do know that one empirical science, the medical science, did exert an influence on the method and materials of philosophy. At several points in the history of Greek philosophy medicine and philosophy merged: in Empedocles, Aristotle, and the Empirical Sceptics.⁵² It seems probable, then, that the empirical method in philosophy owed a great deal to its success in the medical science of the time.

The aim of Hippocrates as early as the fifth century B.C. was to detach the medical science from religion and rational philosophy and to raise it from mere empiricism to the status of a positive science. In the Hippocratic treatise, *On Ancient Medicine*, a scientific methodology is established on the basis of the substitution of a relation between signs and things signified for the relation between causes and effects. "The riddle of the universe may remain unsolved, and yet physical science both can and ought to progress independently." The ability to predict successfully is the essence and justification of science. Prediction is based on data from our own experience, from the experience of others, and from the records of the past, all duly tested. We predict not from causes, but from signs. Medicine is a science of prediction from signs and as such is empirically grounded and controlled. On such a basis it nevertheless has working principles for the extension of scientific method to the future.

It is unfair to classify Sextus Empiricus as the culmination of scepticism. Such a designation neglects the fact that he is a medic by profession with the background of a positive, empirical science. The theory of signs in the eighth book of his work against the logicians⁵³ is the key to the position he holds in philosophy. In this discussion it is clear that a sceptical approach is only a means to the development of a positive empiricism. A rigorous polemic

⁵¹ The Stoic arguments in *De Signis* are attributed to Dionysius of Cyrene, Stoic mathematician of the generation prior to Posidonius.

⁵² Menodotus and Sextus Empiricus.

⁵³ S.E., *Adv. Math.* VIII 141-299.

against the indicative sign of the dogmatic philosophers, both Stoics and Epicureans, serves to emphasize the importance and validity of the admonitive sign, which has its basis within an empirical theory of meaning. The purpose is primarily epistemological, to determine the limits and legitimate objects of our enquiry and knowledge. However, as in the case of the English empiricists and Condillac, with similar orientation and purposes, the result is the affirmation of a phenomenalist view with the accompanying limitation of metaphysical speculation.

We saw in the Stoic and Epicurean divisions of reality and in the corresponding classes of signs that some objects are obscure by nature, others obscure at the time, but of the same kind as the experienceable. According to Sextus, the first class of objects are known by the indicative sign, the second by the admonitive sign. The admonitive sign may be defined as "an object which, having been observed along with, or in conjunction with, another object, evidently at some time in the past, leads us to the memory or recollection of the object which accompanied it, now not evidently experienced". For example, we say that smoke is the sign of fire as we have observed by direct experience in the past the conjunction of smoke and fire on many occasions, so that now, on seeing the one, namely the smoke, we immediately recall the other, the fire, not itself visible.⁵⁴

The indicative sign differs radically from the admonitive. It designates objects obscure by nature, that is, things-in-themselves, beyond phenomena. Such a sign relation cannot be constructed on the basis of experience, since the object is not experienced and so is not capable of being observed along with anything that appears.⁵⁵ The indicative sign must be necessarily indicative of what it signifies and known *a priori* and apart from experience. Sextus proceeds to show the difficulty and impossibility involved in a theory of indicative signs. The admonitive sign is valid since it has its basis in daily experience and is necessary for the development of any art or science, as the means of generalizing beyond the moment and the individual. The indicative sign, on the contrary, is fashioned by dogmatic philosophers and rationalistic physicians to furnish to them evidence of the nature of things-in-themselves. He admits the validity of the admonitive sign, which life

⁵⁴ *Ibid.* 152.

⁵⁵ *Ibid.* 154.

requires, but he rejects the indicative sign, which is falsely assumed to reveal things obscure, as contrary to experience and meaningless.

The bulk of the Sceptic attack is centered on the *a priori* sign of the Stoic school. The Stoics are right in so far as they hold that all *a priori* truths are analytic. However, for Sextus such truth is not inference. Inference requires the statement of a new fact not already contained in the premisses; in other words, a synthetic relation between premisses and conclusion. The Stoic position was that certain synthetic truths can be established *a priori* and thus have the necessity attaching to analytic truths. This is essentially the status of signs for them. The Sceptic argument amounts to the denial of *a priori* synthetic judgments; and to the assertion that the Stoics must choose between *a priori* necessity which accrues only to analytic truths, and *a posteriori* contingency and probability.⁵⁶

A further criticism which Sextus has to proffer against the Stoic definition of the sign as a proposition and semiotic as dialectic is that the Stoics thus limit signification to the formal level exclusively.⁵⁷ This restriction would eliminate a large part of the field of symbolism. On the human level, there is the practical use of signs by the farmer and the seaman, who are unversed in dialectic. Farmers and seamen do not rely on an absolutely necessary science, but upon signs which indicate to them what to expect in the future on the basis of their past experience. Furthermore, Sextus would not exclude the use of signs from the animal level. Animals use signs although they are incapable of forming propositions.

The similarity of position of the later Epicurean school of Philodemus and that of Sextus and the empirical physicians is apparent from this brief discussion. The method of analogy which Philodemus expounds is essentially the same as that of the medics as explained by Galen.⁵⁸ Although the earlier Epicureans were subject to the Sceptic criticism that within an empirical theory of meaning and method the Epicurean metaphysics was untenable, the criticism is not so obvious of Philodemus' position. It is clear from his treatise that he has attempted to formulate his metaphysics on empirical grounds.

⁵⁶ *Ibid.* 252-68.

⁵⁷ *Ibid.* 269-71.

⁵⁸ Galen, *Subfiguratio Empirica*, Ch. ix.

The parallelism between Greek empiricism and English empiricism is evident in both method and results. In addition, the empirical scepticism of Sextus shows a striking similarity to the contemporary positivistic movement. The positivist recognizes the impossibility of gaining absolute knowledge of things, gives up the search for the origin and destiny of the universe and the inner causes of phenomena, and restricts himself to phenomena and the observation of their laws of succession. Science is limited to the systematic coördination of phenomena and the knowledge of their uniformities, which are termed laws. Sextus does not limit himself to the mere observation of phenomena, but attempts, in accordance with his profession, to formulate some general rules. Laws are generalized facts, formulated on the basis of the method of inference from similar to similar (ἡ τοῦ ὁμοίου μετάβασις).⁵⁹ The general principles of science result from the association of phenomena and the extension of the method beyond immediate experience. Thus, in the constant reproduction of the same series of phenomena the Greek empiricists find the means of foreseeing the return of an event, and an empirical equivalent for the principle of causation.

The Hellenistic period, of course, lacks much in the way of an adequate treatment of all the issues involved in empiricism and induction. A complete recognition of the significance for metaphysics and knowledge of the elaboration of an empirical theory of meaning is not to be found at this early date. This was probably the result of an insufficient analysis of what the given and experience involve. This in turn was due to a large extent to the lack of scientific data. The social factor in knowledge was not sufficiently considered. The assumption of a social experience and world seems to have been characteristic of the Greek mind, and accordingly, the relation between the individual and the social points of view was not considered. A recognition of the common and constant elements in a changing environment led the Epicureans and Sceptics to support in part what would today be called an objective relativism. The tendency in this direction is the result of a firm stress on an objective and realistic view along with the acceptance of an empirical method.

ESTELLE ALLEN DE LACY

PRINCETON, NEW JERSEY

⁵⁹ Cf. Galen, *Subfiguratio Empirica*, viii, ix.

